Title Use of Cloud Computing and Mobile Platforms for Development of Structural Engineering Applications

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Abstract

Advances in mobile and cloud technology have enabled a wide range of applications to be successfully integrated into the workflows of many industries and is now at the forefront of research in those industries, including the construction industry for construction management and facilities maintenances.

The field of structural engineering is currently limited to desktop computers and mainframes specifically the structural design process. Frameworks have been successfully developed and tested for structural engineering. No framework is yet in place for structural engineering applications to harness mobile and cloud technology, like for software development. Furthermore, no research has been conducted in developing such a framework.

This research presents a framework for the developments and usage of mobile platforms and cloud computing in structural engineering applications. It is based on the components based software engineering principles which have been applied to mobile application development. The framework is separated into the mobile and cloud contexts and defined by their system architectures and components architectures.

Sample implementations of the framework are described in this research including the illustration of their use cases and sequence diagrams. Possible methods of implementation of the relevant framework have also been described. The advantages of using the proposed framework have also been discussed with comparisons to existing applications.

Keywords Structural engineering, framework, mobile platforms, cloud computing, components based software, model view controller, application development, application architecture, system architecture, components architecture, SaaS, IaaS.